Vacation Travel Itinerary Planner

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Feb 2021

Google Map Pins Scatter Plot
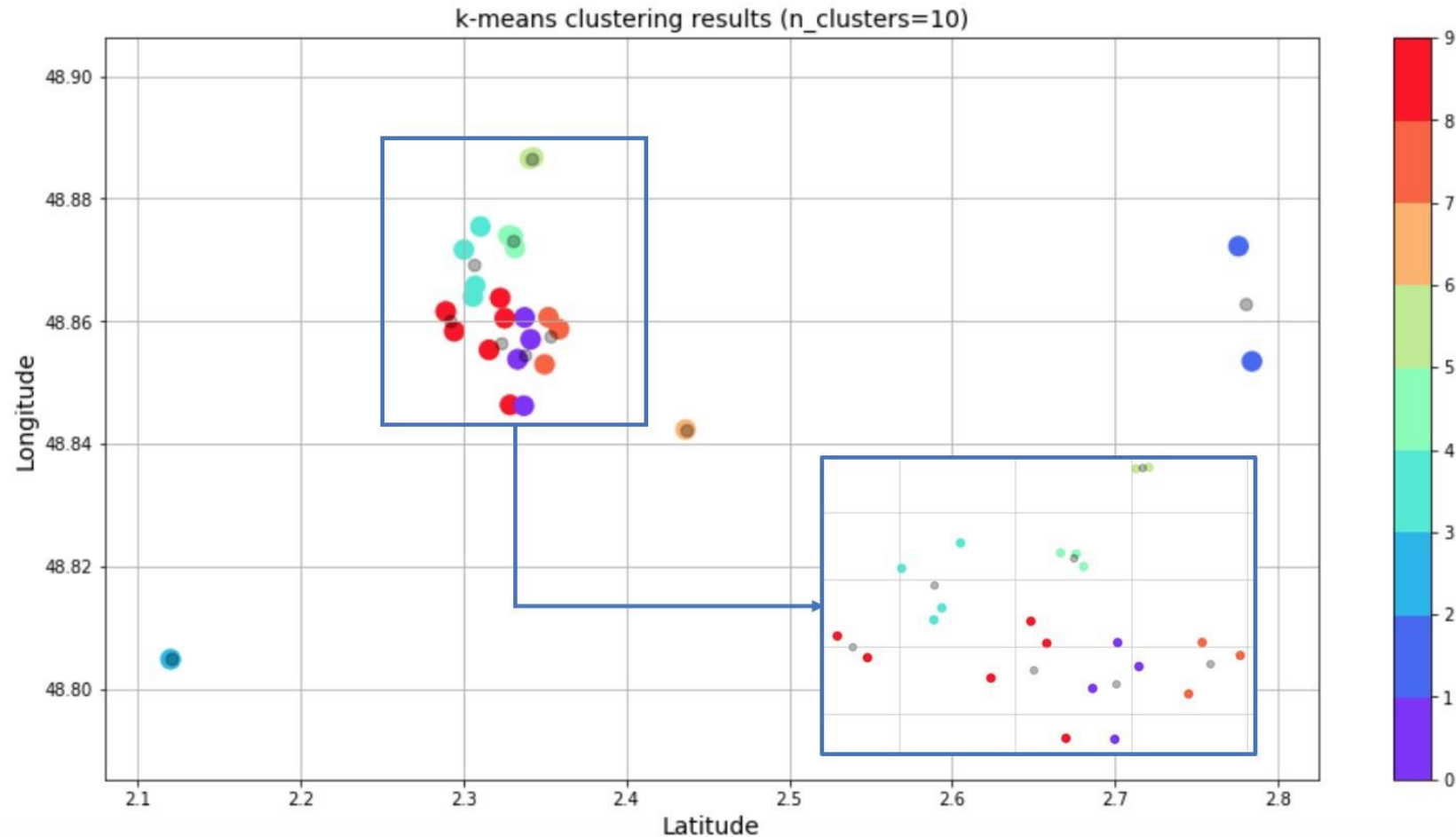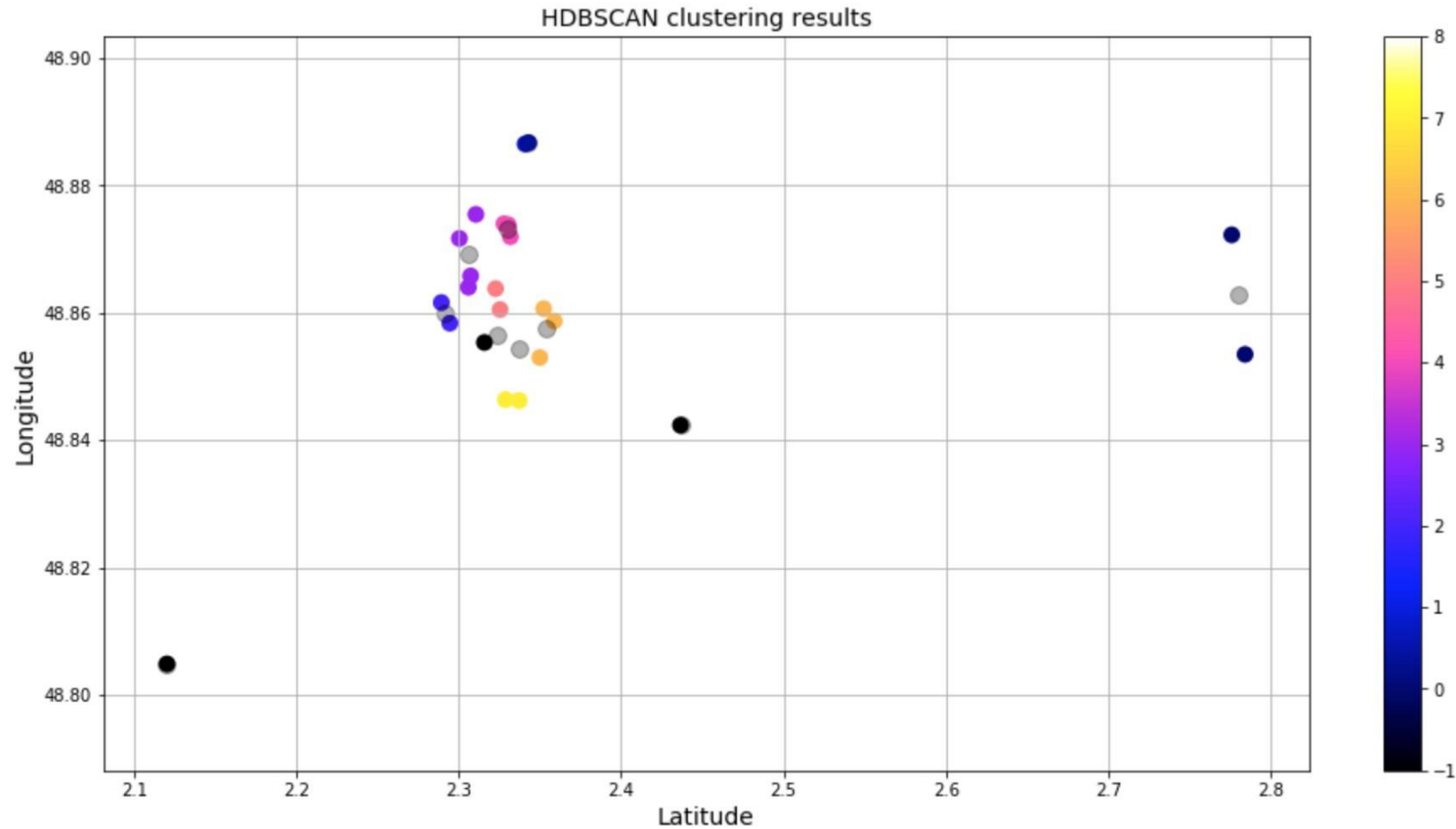
The mathematical condition for the K clusters C_k and the K centroids μ_k can be expressed as:

$$\text{Minimize} \sum_{k=1}^{K} \sum_{x_n \in C_k} ||x_n - \mu_k||^2 \text{ with respect to } C_k, \mu_k.$$

k-means was used to generate 10 clusters (one for each day), the black dots represent cluster centers

k-means clustering results (n_clusters=10)

HDBSCAN generated 9 clusters and 3 data points as 'noise'

HDBSCAN clustering results

Itinerary prepared

	Longitude	Latitude	Landmark	Cluster	Vacation Day
23	2.315835	48.855307	Rodin Museum	-1	NA/Noise
20	2.436470	48.842348	Sainte-Chapelle de Vincennes	-1	NA/Noise
10	2.120355	48.804865	Palace of Versailles	-1	NA/Noise
12	2.783593	48.867386	Disneyland Paris	0	Monday
17	2.783418	48.852891	La Vallee Village	0	Monday
3	2.340802	48.886503	Place du Tertre	1	Tuesday
4	2.343030	48.886711	The Basilica of the Sacred Heart of Paris	1	Tuesday
1	2.289282	48.861596	Trocadéro Gardens	2	Wednesday
2	2.293046	48.856093	Eiffel Tower	2	Wednesday
18	2.307796	48.866229	Champs-Élysées	3	Thursday
11	2.305937	48.864011	Bateaux-Mouches	3	Thursday
25	2.310732	48.875026	Musée Jacquemart-André	3	Thursday
5	2.300457	48.871545	Louis Vuitton Maison Champs Élysées	3	Thursday
8	2.328071	48.874010	Printemps Haussmann	4	Friday
7	2.331601	48.871970	Palais Garnier	4	Friday
6	2.331978	48.873734	Galeries Lafayette Haussmann	4	Friday
19	2.325354	48.860547	Musée d'Orsay	5	Saturday
21	2.322672	48.863788	Musée de l'Orangerie	5	Saturday
24	2.333328	48.853798	Saint-Germain-des-Prés	6	Sunday
15	2.337160	48.846222	Luxembourg Gardens	6	Sunday
16	2.341325	48.857050	Pont Neuf	6	Sunday
9	2.337644	48.860611	Louvre Museum	6	Sunday
0	2.328528	48.846271	French Alliance Paris Ile-De-France	6	Sunday